

Life Sciences Data Archive (LSDA) in the Post-Shuttle Era

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ABSTRACT

Now, more than ever before, NASA is realizing the value and importance of their intellectual assets. Principles of knowledge management, the systematic use and reuse of information/experience/expertise to achieve a specific goal, are being applied throughout the agency.

LSDA is also applying these solutions, which rely on a combination of content and collaboration technologies, to enable research teams to create, capture, share, and harness knowledge to do the things they do well, even better.

In the early days of spaceflight, space life sciences data were been collected and stored in numerous databases, formats, media-types and geographical locations. These data were largely unknown/unavailable to the research community. The Biomedical Informatics and Health Care Systems Branch of the Space Life Sciences Directorate at JSC and the Data Archive Project at ARC, with funding from the Human Research Program through the Exploration Medical Capability Element, are fulfilling these requirements through the systematic population of the Life Sciences Data Archive. This project constitutes a formal system for the acquisition, archival and distribution of data for HRP-related experiments and investigations. The general goal of the archive is to acquire, preserve, and distribute these data and be responsive to inquiries from the science communities.

- Information about experiments and data, as well as non-attributable human data and data from other species' are available on our public Web site <http://lsda.jsc.nasa.gov>. The Web site also includes a repository for biospecimens, and a utilization process.
- NASA has undertaken an initiative to develop a Shuttle Data Archive repository. The Shuttle program is nearing its end in 2010 and it is critical that the medical and research data related to the Shuttle program be captured, retained, and usable for research, lessons learned, and future mission planning.
- Communities of practice are groups of people who share a concern or a passion for something they do, and learn how to do it better as they interact regularly. LSDA works with the HRP community of practice to ensure that we are preserving the relevant research and data they need in the LSDA repository.
- An evidence-based approach to risk management is required in space life sciences. Evidence changes over time. LSDA has a pilot project with Collexis, a new type of Web-based search engine. Collexis differentiates itself from full-text search engines by making use of thesauri for information retrieval. The high-quality search is based on

semantics that have been defined in a life sciences ontology. Additionally, Collexis' matching technology is unique, allowing discovery of partially matching documents. Users do not have to construct a complicated (Boolean) search query, but can simply enter a free text search without the risk of getting "no results". Collexis may address these issues by virtue of its retrieval and discovery capabilities across multiple repositories.

In summary, the LSDA has been developed to ensure that the scientific community and the public have access to the results of NASA-related Life Sciences Data. This is mandated by policies and guidelines which promote the development and evolution of such an archive.